

**WHAT IS CLAIMED IS:**

1. A multimedia packet processing system, comprising:
  - a dynamic back-off access module configured to set back-off timers to establish a transmission sequence for packets and further configured to set a priority of the packets in order to transmit a higher priority packet before a lower priority packet;
  - 5 a priority preemption module configured to modify the transmission sequence for the packets in accordance with the priority of packets determined by the dynamic back-off access module; and
  - a buffer configured to store and transmit the packets in accordance with the sequence of the priority preemption module.
2. The system of claim 1, wherein a media access control (MAC) processor comprises the dynamic back-off access module, the priority presumption module, and the buffer.
3. The system of claim 1, where the buffer transmits packets over a wireless local area network (LAN).
4. The system of claim 1, wherein the dynamic back-off access module sets a

first back-off time for the higher priority packet and a second back-off time for the lower priority packet, wherein the first back-off time is less than the second back-off time.

5. The system of claim 1, wherein the dynamic back-off access module is configured to set the priority of packets to be transmitted in order of video, audio, then ordinary data.

6. The system of claim 1, wherein the priority preemption module is configured to modify the transmission sequence by preempting the lower priority packet with the higher priority packet.

7. The system of claim 6, wherein lower priority packet data that has been preempted has priority over the lower priority data that has not been preempted.

8. The system of claim 1, wherein the lower priority packet comprises an ordinary data packet and the higher priority packet comprises one of a video packet and an audio packet.

9. The system of claim 6, wherein the buffer comprises:  
a first buffer module configured to store and manage data packets received

prior to a back-off process of the dynamic back-off access module; and

a second buffer module configured to store and manage the preempted lower priority packet waiting to be transmitted after the transmission of the higher priority packet.

10. A method of processing multimedia packets, comprising:
  - establishing a priority of data packets to be transmitted;
  - suspending a transmission of data packets being transmitted if higher priority packets are inputted and enabling the higher priority packets to preempt lower priority data packets in the transmission sequence;
  - storing the preempted data packets;
  - transmitting the higher priority packets; and
  - transmitting the stored preempted data packets, after the higher priority packets have been transmitted.

11. The method of claim 10, wherein storing the preempted data packets and transmitting the higher priority packets are executed simultaneously.

12. The method of claim 10, further comprising establishing the priority of packets to be transmitted in order of video first, audio second, and ordinary data packets

third.

13. The method of claim 12, further comprising setting shorter back-off times for higher priority packets such that higher priority packets are transmitted before lower priority packets.

14. The method of claim 10, wherein all data is stored in a first buffer prior to transmission, and wherein the preempted data packets are stored in a second buffer.

15. The method of claim 10, wherein transmitting the stored preempted data packets comprises:

determining whether all of the higher priority packets that preempted data packets in the transmission sequence have been transmitted;

prioritizing the preempted data packets over non-preempted lower priority data packets;

transmitting the preempted data packets if the higher priority packets have been transmitted; and

transmitting non-preempted data packets after the preempted data packets have been transmitted.

16. An apparatus for processing packets, comprising:
- a first buffer configured to store packets for transmission;
  - a first logic device configured to sequence the stored packets according to a priority;
- 5            a second logic device configured to preempt a packet of a first priority in the sequence with a packet of a second priority;
- a second buffer configured to store the preempted packet;
  - a transmitter configured to transmit the packet of the second priority before transmitting the preempted packet, and further configured to transmit the preempted packet upon completion of the transmission of the packet of the second priority.
17. The apparatus of claim 16, wherein the transmitter is configured to transmit the preempted packet before transmitting any other data packets stored in the first buffer.
18. The apparatus of claim 16, wherein the packet of the second priority is one of a video packet and an audio packet, and the packet of the first priority is a data packet.

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19. The apparatus of claim 16, wherein the second logic device is further configured to preempt the packet of the second priority with a packet of a third priority.
20. The apparatus of claim 19, wherein the packet of the third priority is a video packet, the packet of the second priority is an audio packet, and the packet of the first priority is a data packet.
21. An apparatus for processing packets, comprising:  
means for suspending the transmission of data packets being transmitted if higher priority packets are inputted and enabling the higher priority packets to preempt data packets in the transmission sequence;  
means for storing the preempted data packets;  
means for transmitting the higher priority packets; and  
means for transmitting the stored preempted data packets, after the higher priority packets have been transmitted.
22. A method of transmitting packets on a wireless network, comprising:  
prioritizing the packets according the a type of packet;  
preempting packets of a first priority with packets of a second priority when

packets of the second priority are detected; and  
storing preempted packets in a buffer for later transmission.

23. The method of claim 22, further comprising preempting the packets of the second priority with packets of a third priority.

24. The method of claim 23, wherein the packets of the first priority are data packets, the packets of the second priority are audio packets, and the packets of the third priority are video packets.